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Abstract

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Abstract

Introduction

PENS is a minimally invasive peripheral neuromodulation used in the management of symptomatology of chronic neuropathic pain. Our observational study aimed to evaluate the usability of PENS in different types of localized neuropathic pain as well as the short and medium term efficacy of a single shot PENS treatment.

Methods

Five patients aged 60 or older with neuropathic pain lasting more than 2 months were treated. All patients were taking gabapentinoids at medium-high doses. The procedure was performed on an outpatient setting. After marking the allodynic/hyperalgesic area, a fine gauge bipolar needle conductive throughout its length was introduced and tunneled percutaneously along the major axis of the painful area and electric current was delivered. A pulse frequency 2HZ-100Hz automatically changed every 3 seconds for 25 minutes. The intensity of stimulation from 1 mA to 20 mA was changed according to the patient's perception. NRS and DN4 were assessed at baseline and T0 (immediately after PENS), T1 (15 days after PENS), T2 (30 days after PENS), T3 (60 days after PENS). Patients with pain persistence at T2 with intensity >50 % of the baseline value repeated treatment. Perceived health outcome was measured with EQ-5D questionnaire at baseline and at the end of follow up [1,2]. Adverse events and patient satisfaction were reported.

Results

Patient 1 Arnold neuralgia: showed complete pain resolution immediately after PENS (NRS 7/10 at baseline to 0/10 at T0), DN4 decreased from 6/10 to 0/10. Pain relief lasted 6 months, then the patient repeated PENS.

Patient 2 Cervicodorsal post-herpetic neuralgia: obtained the best result one month after treatment (NRS 8/10 at baseline to 2/10 at T2), DN4 decreased from 6/10 to 1/10 (discontinuous tingling).

Patient 3 Trigeminal neuralgia of 1st and 2nd branches: had a significant pain relief on the ophthalmic division one month after PENS (NRS 10/10 at baseline to 5/10 at T2), DN4 decreased from 7/10 to 0/10.

Patient 4, Cluster headache: showed good results one month after PENS performed on the frontal region (NRS 10/10 at baseline to 3/10 at T2), DN4 decreased from 5/10 to 1/10 (burning).

Patient 5 Painful scar post inguinal herniorrhaphy: repeated PENS at T2 getting the best result two months after the first PENS (NRS 8/10 at baseline to 4/10 at T3), DN4 decreased from 4/10 to 1/10 (burning).

No clinically significant adverse events occurred. EQ-5D increased significantly at T2 compared to the baseline.

Conclusions

PENS therapy produced significant pain relief one month after treatment. All patients reduced oral gabapentinoid intake. Minimally relevant adverse events as well as the simplicity of performing the procedure define its safety and repeatability.

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